

18.12.2018

VOTE EXPECTATIONS VERSUS VOTE INTENTIONS

Rival Forecasting Strategies

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Online Appendix

1 Data sources

1. *S*: seat share

Proportion of seats won by a party; per election; McGuinness et al. (2012), Hawkins et al. (2015), Apostolova et al. (2017).

Because Others won no seats in 1964 and the logarithm of zero is undefined, the fourth equation of the intentions in lagged seat share log-linear model (LOG) cannot be fit to the original data. As is common in such situations, we modified the data by adding a small constant value to the variables with zeros before taking the logarithm. We chose to add a constant value of $1/650$ to the seat share of Others to relate the constant to the total number of seats in Westminster, which is usually around 650. This slight modification enabled us to fit the fourth equation to data without unduly influencing the results. When calculating the predicted values of this equations and exponentiating the output, we then again subtracted the constant value of $1/650$ to calculate seat share forecasts on the original scale. Of course we fitted the other three equations to the original data without modifying it.

2. *G*: government status

Indicates whether party was in government; per election; McGuinness et al. (2012), Hawkins et al. (2015), Apostolova et al. (2017).

As coalition governments are the exception in British politics, we do not count junior coalition partners as being part of the government.

3. *V*: vote share

Proportion of votes won by party; per election; McGuinness et al. (2012), Hawkins et al. (2015), Apostolova et al. (2017).

4. *w*: vote share (constituency)

Proportion of votes won by a party in a constituency; per election without boundary changes; 1983 & 1987: Dorling (1993), 1997: Steve Fisher, and 2010 & 2015: Rallings & Thrasher (2010, 2015).

5. *I*: vote intention

Proportion of respondents who say they intend to vote for a party; monthly (if more than one survey was reported in a month, we take the median value as the monthly estimate); June 1943 to December 2000: Gallup (King et al. 2001, 2-21), April 2004 to October 2015: Essex Continuous Monitoring Survey (CMS) (Clarke et al. 2009), and May and June 2017: ComRes.

Survey question wording:

- Gallup: Question usually read “If there were a general election tomorrow, which party would you vote for?” If don’t know: “Which party are you most inclined to vote for?”, but in June 1943 “If there were a general election tomorrow, how would you vote?”, in second survey in June 1945 “Have you definitely made up your mind how you intend to vote at the general election?” If Yes: “For which candidate do you intend to vote?”, in January 1946 “If you had to vote today, for which party would you vote?”.
- Essex Continuous Monitoring Survey (CMS): Question read “If there were a General Election tomorrow, which party would you vote for?” If other party: “You say you would vote for another party. Which, if any, of the following would you vote for?” If other party: “Which party would you be most inclined to vote for?”.
- ComRes: In May (June) 2017 the question read “At the General Election coming up in June (If there were a General Election tomorrow to elect MPs to Westminster), will (would) you vote Conservative, Labour, Liberal Democrat, UKIP, SNP, Plaid Cymru or for some other party?”

6. *E*: vote expectation

Proportion of respondents who say they intend to vote for a party; monthly; June 1943 to December 2000: Gallup (King et al. 2001, 2-21), April 2005 to October 2015: Essex Continuous Monitoring Survey (CMS) (Clarke et al. 2009), and May and June 2017: ComRes.

Survey question wording:

- Gallup: Question usually read “Irrespective of how you, yourself, will vote, who do you think will win the next general election?”, but in June 1947 “Regardless of your own political views, which party do you think will win the next general election”, in July 1948 “Irrespective of how you yourself feel, which party do you think will win the next general election?”, in October 1949 “Which party do you think will win?”, in August 1951 “Which party do you think will win the next election?”, in September 1951 “Who do you think will win the next election?”, and in 1958 up to October 1959 “Irrespective of how you, yourself, would vote, who do you think would win the next general election?”.
- Essex Continuous Monitoring Survey (CMS): Question read “Regardless of how you yourself may vote, which party do you think is most likely to win the next General Election?”.

- ComRes: In May (June) 2017 the question read “Thinking about the upcoming (next week’s) General Election on June 8th, for each of the following pairs of statements please indicate which comes closest to your opinion. (a) Theresa May and the Conservative Party are likely to win the General Election (b) Jeremy Corbyn and the Labour Party are likely to win the General Election.”

2 Forecasting models

1. NAI: Intentions in naive UNS model

$$\tilde{V}_{i,t[i]}^{p[j]} = I_i^{p[j]}, \quad (1)$$

$$\tilde{w}_{i,t[i]}^{k,p[j]} = w_{i,t[i]-1}^{k,p[j]} + \tilde{V}_{i,t[i]}^{p[j]} - V_{i,t[i]-1}^{p[j]}, \quad (2)$$

$$o_{i,t[i]}^{k,p[j]} = \text{delta} \left(j, \arg \max_j \left\{ \tilde{w}_{i,t[i]}^{k,p[j]} \right\} \right), \quad (3)$$

$$\tilde{S}_{i,t[i]}^{p[j]} = \sum_{k=1}^K o_{i,t[i]}^{k,p[j]} / K. \quad (4)$$

2. NON: Intentions in non-naive UNS model

= NAI with regressing vote shares on intentions as well as probabilistically forecasting who wins constituency

$$V_{i,t[i]}^{p[j]} = \beta_1^{p[j]} + \beta_2^{p[j]} I_i^{p[j]} + \varepsilon_i^{p[j]}, \quad (5)$$

$$\tilde{V}_{i,t[i]}^{p[j]} = \hat{V}_{i,t[i]}^{p[j]} / \sum_j \hat{V}_{i,t[i]}^{p[j]}, \quad (6)$$

$$r_{i,t[i]}^{k,p[j]} = \exp \left[- \left(\frac{\max_j \left\{ \tilde{w}_{i,t[i]}^{k,p[j]} \right\} - \tilde{w}_{i,t[i]}^{k,p[j]}}{4} \right)^{1.5} \right], \quad (7)$$

$$\tilde{S}_{i,t[i]}^{p[j]} = \sum_{k=1}^K r_{i,t[i]}^{k,p[j]} / K. \quad (8)$$

3. GOV: Intentions and government status in non-naive UNS model

= NON with government status added to regression

$$V_{i,t[i]}^{p[j]} = \beta_1^{p[j]} + \beta_2^{p[j]} G_{t[i]}^{p[j]} + \beta_3^{p[j]} I_i^{p[j]} + \varepsilon_i^{p[j]}, \quad (9)$$

4. LAG: Intentions and lagged vote share in non-naive UNS model

= GOV with government status replaced by lagged vote share

$$V_{i,t[i]}^{p[j]} = \beta_1^{p[j]} + \beta_2^{p[j]} V_{t[i]-1}^{p[j]} + \beta_3^{p[j]} I_i^{p[j]} + \varepsilon_i^{p[j]}. \quad (10)$$

5. CHA: Intentions and change in vote share in non-naive UNS model

= LAG with change scores instead of levels

$$V_{i,t[i]}^{p[j]} - V_{i,t[i]-1}^{p[j]} = \beta_1^{p[j]} + \beta_2^{p[j]} \left(I_i^{p[j]} - V_{t[i]-1}^{p[j]} \right) + \varepsilon_i^{p[j]}, \quad (11)$$

$$\hat{V}_{i,t[i]}^{p[j]} = \left(V_{i,t[i]}^{p[j]} - V_{i,t[i]-1}^{p[j]} \right) + V_{t[i]-1}^{p[j]}. \quad (12)$$

6. LOG: Intentions, lagged seat share, and party split in log-linear model

$$\log S_{i,t[i]}^{p[j]} = \beta_1^{p[j]} + \beta_2^{p[j]} \log S_{i,t[i]-1}^{p[j]} + \beta_3^{p[j]} \log I_i^{p[j]} + \beta_4^{p[j]} \log I_i^{m[j]} + \beta_5^{p[j]} P_i + \varepsilon_i^{p[j]}, \quad (13)$$

$$\tilde{S}_{i,t[i]}^{p[j]} = \exp\left(\widehat{\log S_{i,t[i]}^{p[j]}}\right) / \sum_j \exp\left(\widehat{\log S_{i,t[i]}^{p[j]}}\right). \quad (14)$$

7. EXP: Expectations and lagged seat share in linear model

= LOG in linear form with intentions replaced by expectations and without party split

$$S_{i,t[i]}^{p[j]} = \beta_1^{p[j]} + \beta_2^{p[j]} S_{i,t[i]-1}^{p[j]} + \beta_3^{p[j]} E_i^{p[j]} + \beta_4^{p[j]} E_i^{m[j]} + \varepsilon_i^{p[j]}, \quad (15)$$

$$\tilde{S}_{i,t[i]}^{p[j]} = \hat{S}_{i,t[i]}^{p[j]} / \sum_j \hat{S}_{i,t[i]}^{p[j]}. \quad (16)$$

8. LIN: Intentions and lagged seat share in linear model

= EXP with expectations replaced by intentions

$$S_{i,t[i]}^{p[j]} = \beta_1^{p[j]} + \beta_2^{p[j]} S_{i,t[i]-1}^{p[j]} + \beta_3^{p[j]} I_i^{p[j]} + \beta_4^{p[j]} I_i^{m[j]} + \varepsilon_i^{p[j]}. \quad (17)$$

where

$V_{i,t[i]}^{p[j]}$	= national vote share of party j for survey i in election $t[i]$.
i	= $1, \dots, N$
t	= $\{1952, \dots, 2017\}$
j	= $1, \dots, 4$
p	= $\{\text{Con, Lab, Lib, Oth}\}$
\sim	= Forecasted value
$I_i^{p[j]}$	= vote intentions for party $p[j]$ in survey i .
$w_{i,t[i]}^{k,p[j]}$	= vote share in constituency k of party j for survey i in election $t[i]$.
k	= $1, \dots, K$
$o_{i,t[i]}^{k,p[j]}$	= 1 if party j 's is forecasted to win constituency k for survey i and 0 otherwise.
$\text{delta}(a, b)$	= 1 if $a = b$ and 0 if $c \neq d$.
$S_{i,t[i]}^{p[j]}$	= seat share of party j for survey i in election $t[i]$.
$G_{i,t[i]}^{p[j]}$	= 1 if party j governed at survey i in election $t[i]$ and 0 otherwise.
$\varepsilon_i^{p[j]}$	= normally distributed with mean 0 and constant variance.
$\hat{}$	= Expected value based on regression model.
$r_{i,t[i]}^{k,p[j]}$	= probability that party j wins constituency k for survey i in election $t[i]$.
m	= $\{\text{Lab, Con, Con, Con}\}$
P_i	= 1 if election t is 1983 or 1987 and 0 otherwise.
$E_i^{p[j]}$	= vote expectations for party $p[j]$ in survey i

3 Estimation tables

Table 1: Estimates of NON: Intentions in non-naive UNS model.

Outcome	Predictor	1950 to				
		1983	1987	1997	2010	2015
V_t^{CON}	Intercept	0.35 (0.01)	0.37 (0.01)	0.26 (0.01)	0.27 (0.01)	0.27 (0.01)
	I^{CON}	0.21 (0.03)	0.16 (0.02)	0.41 (0.02)	0.35 (0.03)	0.35 (0.03)
	R^2	0.21	0.17	0.51	0.32	0.30
V_t^{LAB}	Intercept	0.16 (0.03)	0.13 (0.02)	0.17 (0.02)	0.16 (0.01)	0.18 (0.01)
	I^{LAB}	0.55 (0.07)	0.62 (0.06)	0.51 (0.04)	0.52 (0.03)	0.43 (0.03)
	R^2	0.26	0.35	0.36	0.42	0.28
V_t^{LIB}	Intercept	0.06 (0.01)	0.07 (0.01)	0.09 (0.01)	0.09 (0.01)	0.07 (0.01)
	I^{LIB}	0.61 (0.05)	0.58 (0.04)	0.50 (0.03)	0.53 (0.03)	0.60 (0.03)
	R^2	0.44	0.52	0.44	0.45	0.47
V_t^{OTH}	Intercept	0.01 (0.00)	0.01 (0.00)	0.02 (0.00)	0.04 (0.00)	0.05 (0.01)
	I^{OTH}	0.51 (0.04)	0.48 (0.04)	0.35 (0.03)	0.19 (0.06)	0.33 (0.14)
	R^2	0.49	0.47	0.27	0.03	0.01
	Num. obs.	174	216	286	352	398

Table 2: Estimates of GOV: Intentions and government status in non-naive UNS model.

Outcome	Predictor	1950 to				
		1983	1987	1997	2010	2015
V_t^{CON}	Intercept	0.33 (0.02)	0.36 (0.01)	0.23 (0.01)	0.20 (0.01)	0.22 (0.01)
	G_t^{CON}	0.01 (0.00)	0.00 (0.00)	0.01 (0.00)	0.04 (0.00)	0.03 (0.00)
	I^{CON}	0.24 (0.04)	0.18 (0.03)	0.46 (0.03)	0.48 (0.03)	0.44 (0.03)
	R ²	0.22	0.17	0.52	0.46	0.38
V_t^{LAB}	Intercept	0.13 (0.03)	0.12 (0.02)	0.14 (0.02)	0.14 (0.01)	0.15 (0.02)
	G_t^{LAB}	0.05 (0.01)	0.05 (0.01)	0.05 (0.01)	0.02 (0.01)	0.03 (0.01)
	I^{LAB}	0.58 (0.06)	0.57 (0.05)	0.53 (0.04)	0.55 (0.03)	0.48 (0.03)
	R ²	0.40	0.49	0.51	0.45	0.34
V_t^{LIB}	Intercept	0.06 (0.01)	0.07 (0.01)	0.09 (0.01)	0.09 (0.01)	0.07 (0.01)
	I^{LIB}	0.61 (0.05)	0.58 (0.04)	0.50 (0.03)	0.53 (0.03)	0.60 (0.03)
	R ²	0.44	0.52	0.44	0.45	0.47
V_t^{OTH}	Intercept	0.01 (0.00)	0.01 (0.00)	0.02 (0.00)	0.04 (0.00)	0.05 (0.01)
	I^{OTH}	0.51 (0.04)	0.48 (0.04)	0.35 (0.03)	0.19 (0.06)	0.33 (0.14)
	R ²	0.49	0.47	0.27	0.03	0.01
	Num. obs.	174	216	286	352	398

Table 3: Estimates of LAG: Intentions and lagged vote share in non-naive UNS model.

Outcome	Predictor	1950 to				
		1983	1987	1997	2010	2015
V_t^{CON}	Intercept	0.33 (0.03)	0.38 (0.02)	0.17 (0.03)	0.06 (0.02)	0.05 (0.02)
	V_{t-1}^{CON}	0.02 (0.05)	-0.02 (0.04)	0.18 (0.05)	0.46 (0.03)	0.48 (0.03)
	I^{CON}	0.22 (0.04)	0.16 (0.03)	0.44 (0.02)	0.41 (0.02)	0.41 (0.02)
	R^2	0.21	0.17	0.53	0.56	0.57
V_t^{LAB}	Intercept	-0.29 (0.03)	0.01 (0.02)	0.02 (0.02)	0.00 (0.02)	-0.01 (0.01)
	V_{t-1}^{LAB}	1.35 (0.07)	0.66 (0.05)	0.51 (0.04)	0.51 (0.04)	0.61 (0.03)
	I^{LAB}	0.26 (0.04)	0.26 (0.05)	0.40 (0.03)	0.42 (0.03)	0.36 (0.03)
	R^2	0.76	0.64	0.61	0.62	0.62
V_t^{LIB}	Intercept	0.01 (0.01)	0.05 (0.01)	0.05 (0.01)	0.05 (0.01)	0.05 (0.01)
	V_{t-1}^{LIB}	0.45 (0.07)	0.28 (0.05)	0.33 (0.04)	0.37 (0.03)	0.18 (0.04)
	I^{LIB}	0.59 (0.05)	0.47 (0.04)	0.41 (0.03)	0.41 (0.03)	0.56 (0.03)
	R^2	0.56	0.59	0.56	0.60	0.50
V_t^{OTH}	Intercept	0.01 (0.00)	0.01 (0.00)	0.00 (0.00)	-0.00 (0.00)	-0.03 (0.00)
	V_{t-1}^{OTH}	0.42 (0.05)	0.43 (0.04)	0.71 (0.06)	1.11 (0.03)	1.98 (0.05)
	I^{OTH}	0.21 (0.05)	0.19 (0.04)	0.24 (0.03)	0.14 (0.03)	0.15 (0.07)
	R^2	0.65	0.65	0.50	0.81	0.79
	Num. obs.	174	216	286	352	398

Table 4: Estimates of CHA: Intentions and change in vote share in non-naive UNS model.

Outcome	Predictor	1950 to				
		1983	1987	1997	2010	2015
$V_t^{\text{CON}} - V_{t-1}^{\text{CON}}$	Intercept	0.01 (0.00)	0.01 (0.00)	0.01 (0.00)	0.01 (0.00)	0.01 (0.00)
	$I^{\text{CON}} - V_{t-1}^{\text{CON}}$	0.53 (0.03)	0.47 (0.02)	0.53 (0.02)	0.46 (0.02)	0.45 (0.02)
	R ²	0.70	0.62	0.70	0.67	0.67
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$V_t^{\text{LAB}} - V_{t-1}^{\text{LAB}}$	Intercept	-0.03 (0.00)	-0.02 (0.00)	-0.02 (0.00)	-0.02 (0.00)	-0.03 (0.00)
	$I^{\text{LAB}} - V_{t-1}^{\text{LAB}}$	0.16 (0.05)	0.30 (0.04)	0.44 (0.03)	0.44 (0.02)	0.38 (0.02)
	R ²	0.06	0.18	0.48	0.47	0.44
	<hr/>					
$V_t^{\text{LIB}} - V_{t-1}^{\text{LIB}}$	Intercept	0.02 (0.00)	0.01 (0.00)	0.01 (0.00)	0.01 (0.00)	0.00 (0.00)
	$I^{\text{LIB}} - V_{t-1}^{\text{LIB}}$	0.58 (0.04)	0.56 (0.04)	0.52 (0.03)	0.50 (0.03)	0.67 (0.03)
	R ²	0.57	0.50	0.53	0.51	0.59
	<hr/>					
$V_t^{\text{OTH}} - V_{t-1}^{\text{OTH}}$	Intercept	-0.00 (0.00)	-0.00 (0.00)	0.00 (0.00)	0.01 (0.00)	0.02 (0.00)
	$I^{\text{OTH}} - V_{t-1}^{\text{OTH}}$	0.39 (0.06)	0.36 (0.05)	0.24 (0.03)	0.02 (0.02)	-0.56 (0.05)
	R ²	0.23	0.20	0.19	0.00	0.23
	<hr/>					
	Num. obs.	174	216	286	352	398

4 Accuracy tables

Table 8: Correct prediction of winner and whether or not winner has overall majority (in %) across election years.

Model	Overall	1987	1992	1997	2001	2005	2010	2015	2017
<i>All elections</i>									
Expectations (EXP)	67	100	100	0	100	92	59	57	83
Intentions (LIN)	46	100	83	3	100	8	46	0	50
Intentions (LOG)	32	100	0	0	100	92	24	0	33
<i>N</i>	230	42	36	34	7	13	46	46	6
<i>Elections with constant constituency boundaries</i>									
Expectations (EXP)	85	100	100	–	100	–	–	57	83
Intentions (LAG)	66	100	100	–	100	–	–	0	100
Intentions (LIN)	60	100	83	–	100	–	–	0	50
Intentions (CHA)	60	83	94	–	100	–	–	0	100
Intentions (GOV)	57	95	81	–	100	–	–	4	0
Intentions (NON)	47	74	67	–	100	–	–	0	33
Intentions (LOG)	37	100	0	–	100	–	–	0	33
Intentions (NAI)	27	36	28	–	100	–	–	0	83
<i>N</i>	137	42	36	–	7	–	–	46	6

Abbreviations as in Table 1 in main text.

Table 9: Correct prediction of winner and whether or not winner has overall majority (in %) in quarters and years before election.

Model	Overall	Quarters				Years		
		1	2	3	4	2	3	4
<i>All elections</i>								
Expectations (EXP)	67	67	87	81	73	81	44	66
Intentions (LIN)	46	58	47	44	40	47	37	51
Intentions (LOG)	32	50	47	44	47	32	22	28
<i>N</i>	230	12	15	16	15	57	54	61
<i>Elections with constant constituency boundaries</i>								
Expectations (EXP)	85	83	100	88	86	94	67	88
Intentions (LAG)	66	83	57	62	57	66	64	71
Intentions (LIN)	60	67	57	62	57	54	52	71
Intentions (CHA)	60	83	57	62	57	43	61	71
Intentions (GOV)	57	83	57	75	57	40	48	71
Intentions (NON)	47	67	29	50	14	31	39	71
Intentions (LOG)	37	67	43	38	29	31	33	41
Intentions (NAI)	27	50	14	12	0	17	15	51
<i>N</i>	137	6	7	8	7	35	33	41

Abbreviations as in Table 1 in main text.

5 Accuracy figures

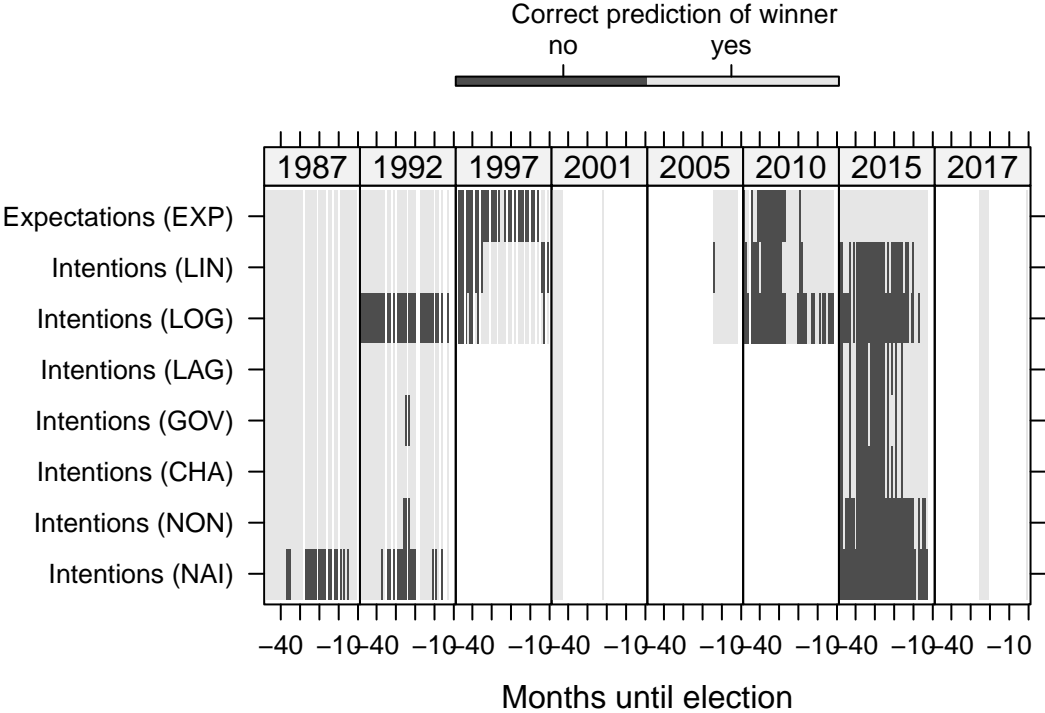


Figure 1: Correct prediction of winner across months by election year. Abbveriations as in Table 1 in main text.

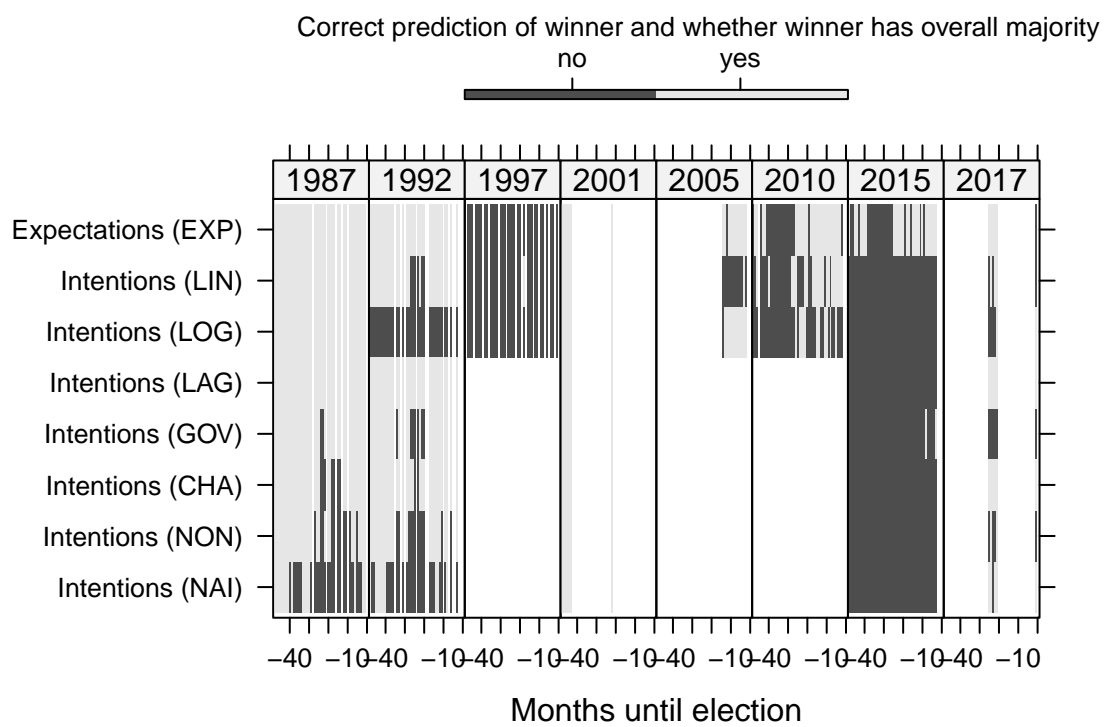


Figure 2: Correct prediction of winner and whether or not winner has overall majority across months by election year. Abbveriations as in Table 1 in main text.

- ☒ NAI: Intentions in naive UNS model
- ▽ LAG: Intentions and lagged vote share in non-naive UNS model
- ◇ CHA: Intentions and change in vote share in non-naive UNS model
- × NON: Intentions in non-naive UNS model
- + GOV: Intentions and government status in non-naive UNS model
- △ LOG: Intentions and lagged seat share in log-linear model
- ○ LIN: Intentions and lagged seat share in linear model
- ● EXP: Expectations and lagged seat share in linear model

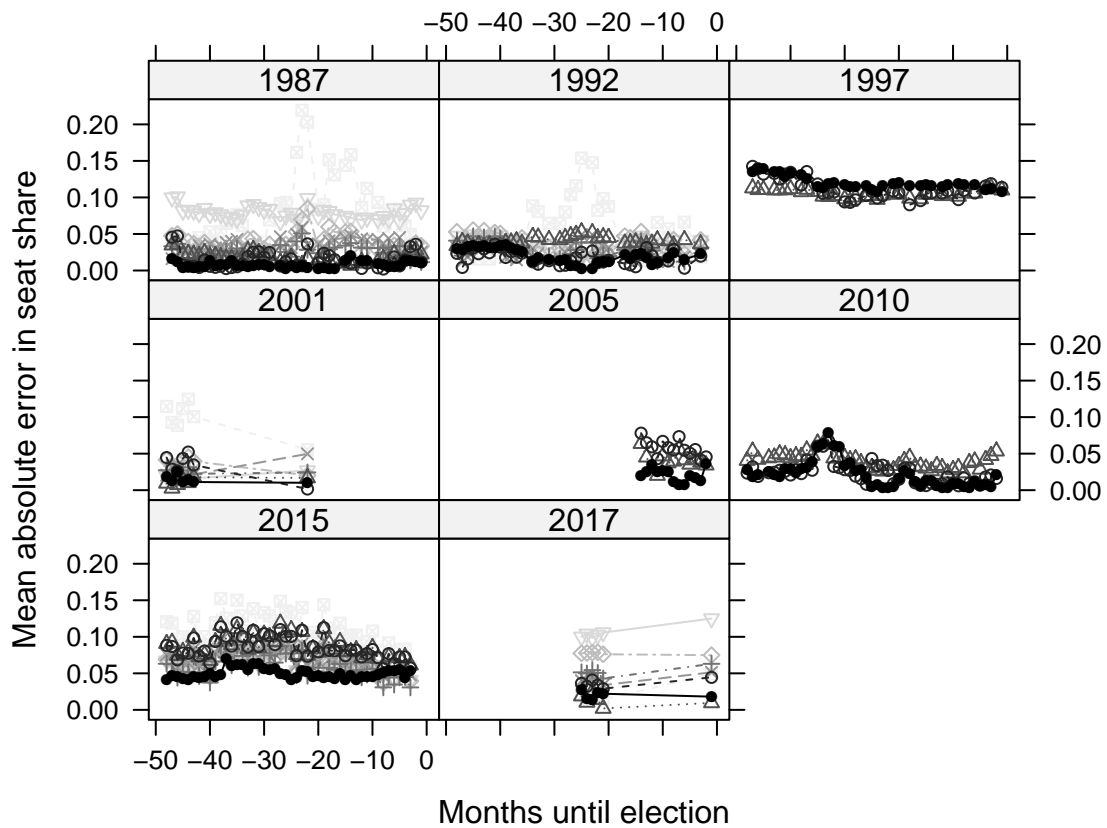


Figure 3: Mean absolute prediction error of seat shares (in %-points) across months by election year.

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